

Pattern Scaling and its Application to the New Scenario Process

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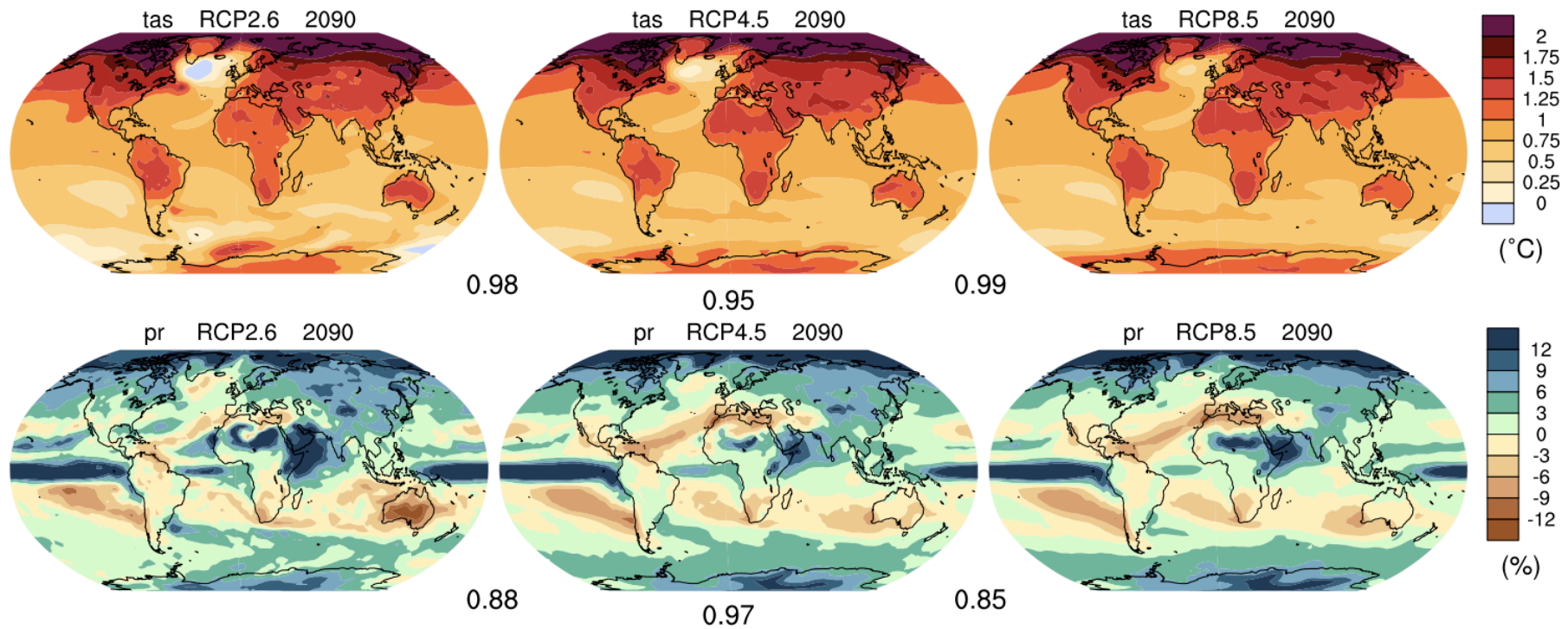
Sponsored by NCAR-IMAGE and NCAR-ISP
(local arrangements and local expenses for participants)
WCRP-WGCM (?)

Pattern Scaling (Santer et al. 1990)

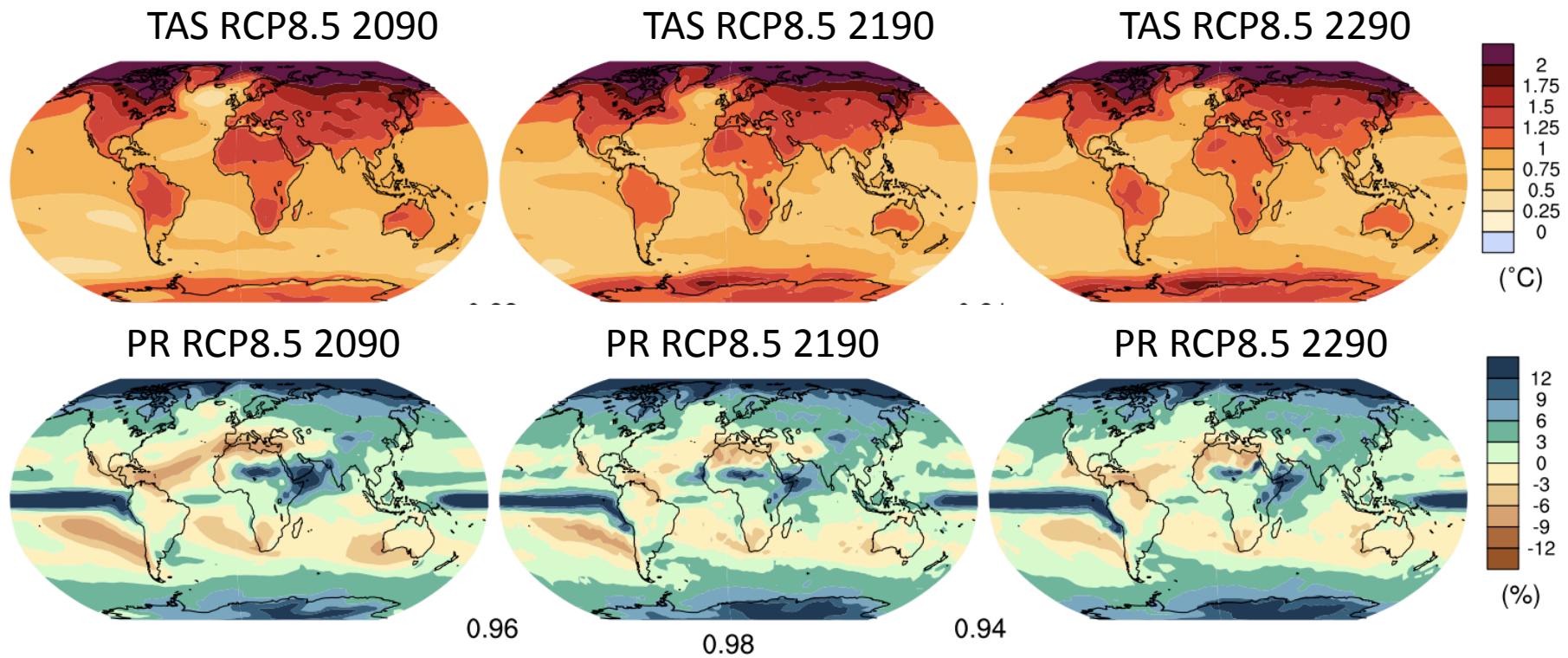
$$p^V(x,y,t,s) \approx p^V(x,y)G(t,s)$$

- V is variable of interest (e.g. average TAS change in DJF)
- p() is pattern (normalized or actual)
- (x,y) spatial coordinates (e.g., grid point)
- t time
- s scenario, model parameters etc.

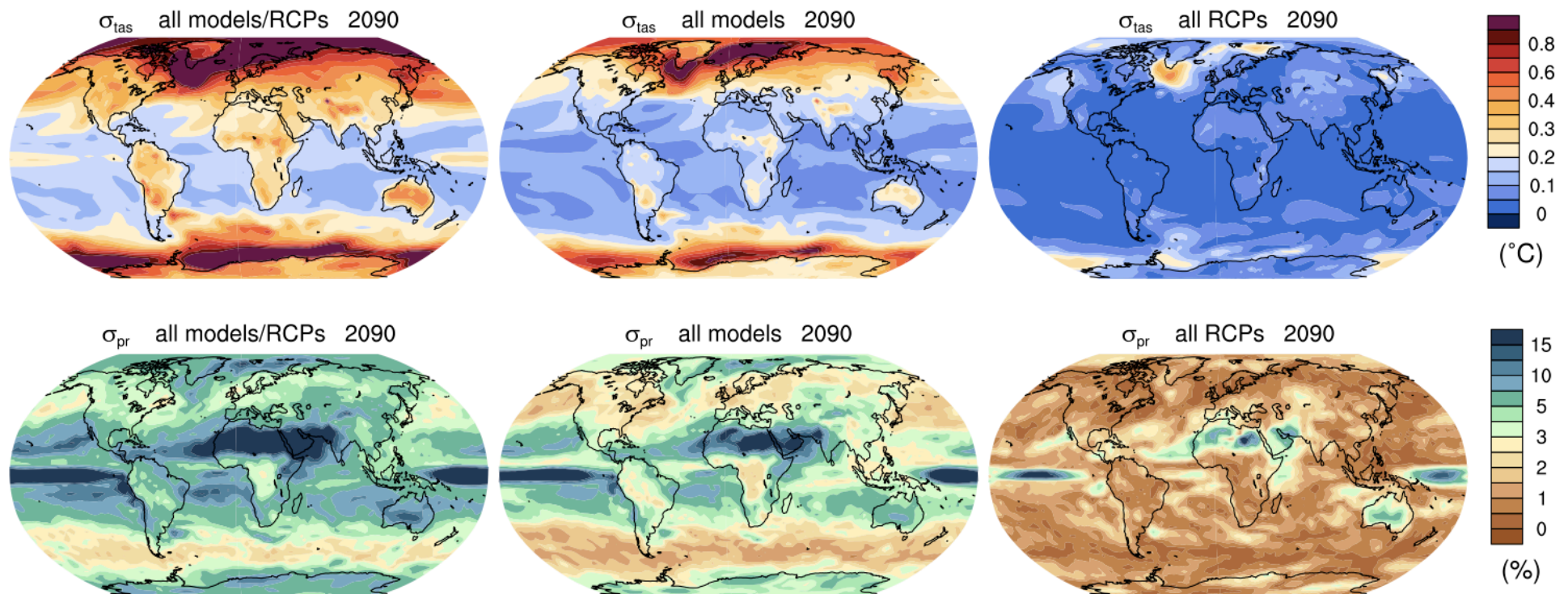
CMIP5 patterns across scenarios



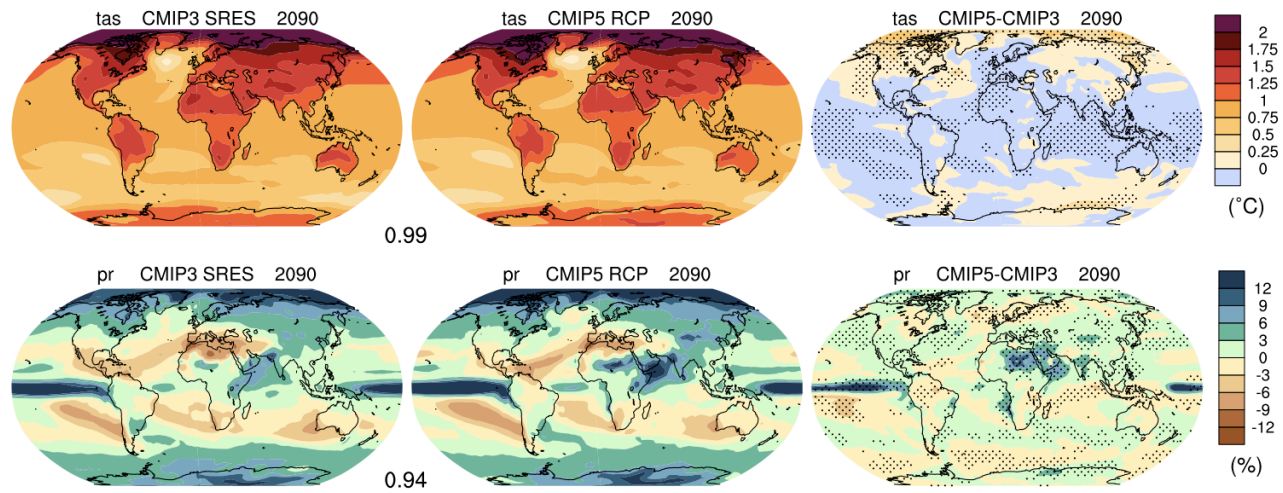
CMIP5 patterns across time



Model vs. Scenario Uncertainty



CMIP3 vs. CMIP5 patterns



Workshop purposes

- Assess the current state of pattern scaling science
- Assess whether current approaches to pattern scaling can meet the needs of integrated assessment and impact modelers for climate change information*
- Identify and prioritize research directions so that pattern scaling can better meet the needs of applied research in the future

*

ESM and AOGCM simulations exist based on the RCPs, but there are two types of simulations that are not available:

- Projections of future climate change under forcing pathways other than the RCPs. (different RF levels); projections under 'baseline' or 'unmitigated' pathways to be compared to RCP mitigation pathways.
- Projections with same global RFs but different regional forcings (land-use; short lived species)

- Tim Carter and James Murphy on initial steering committee.
- Conference call next week to discuss format (open? Invitation-only?), goals, agenda, participants, outcomes, addition to the steering committee.
- Initial participant list of about 35 people from Climate, Impact and Integrated Assessment modeling community.